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Propeller Aircraft Turns and Early Jet Turns

Applewood Heights Study



Background

- Provide historical data on Propeller Aircraft Turns and Early Jet Turns departures from Runways 24 Left and Right
 - Respond to the request from Applewood Heights community members regarding the status and frequency of these procedures
 - Address community perception that there has been an increase in turns made over their neighbourhood since 2011
- 



What are Early Turns?



Propeller Aircraft Turns and Early Jet Turns

Departure procedures specifically designed to:

- Allow aircraft to take a more direct route towards their destination, getting aircraft en route sooner
- Increase runway capacity and efficiency
- Reduce line-ups on the ground
- Reduce fuel consumption and Greenhouse Gas emissions



Propeller Aircraft Turns and Early Jet Turns

- Used only if there is an operational advantage based on destination or aircraft line-up in the departure queue
- Initiatives undertaken in collaboration with airline industry and NAV Canada
 - CENAC briefed and engaged; outcomes will continue to be reported through CENAC



Propeller Aircraft Turns

Propeller Aircraft Turns

- Slower departing propeller aircraft turn after takeoff
- Faster, larger jets continue to use the standard departure flight paths
- Utilized on all runways
- Standard procedure since the 1970s

Hours

- Between 7:00 am and 11:00 pm
- Not used during the restricted hours (12:30 am – 6:30 am)

Prop Turn Extended Hours Trial

- Extension of hours of the propeller turns (originally 7:00 am to 11:00 pm) to 6:30 am to 11:30 pm
- Started in March 2008, currently still under review
- Noise complaints related to the trials are tracked and recorded

Early Jet Turn Procedure

Early Jet Turn Procedure

- Permit immediate departure turns shortly after takeoff for certain smaller jet aircraft
- Procedure was initiated on the east/west runways in 2000
- Became a formalized and published procedure in 2005
- Eligible Jet Types: CRJ1, CRJ2, E135, E45X, J328, CL60, C750, GLEX, GLF4, and GLF5

Hours

- Between 7:00 am and 11:00 pm
- Not used during the restricted hours (12:30 am – 6:30 am)

Early Turn Trial


- Expansion of the procedure to include north/south runways
- Started in March 2008, currently still under review
- Noise complaints related to the trials are tracked and recorded

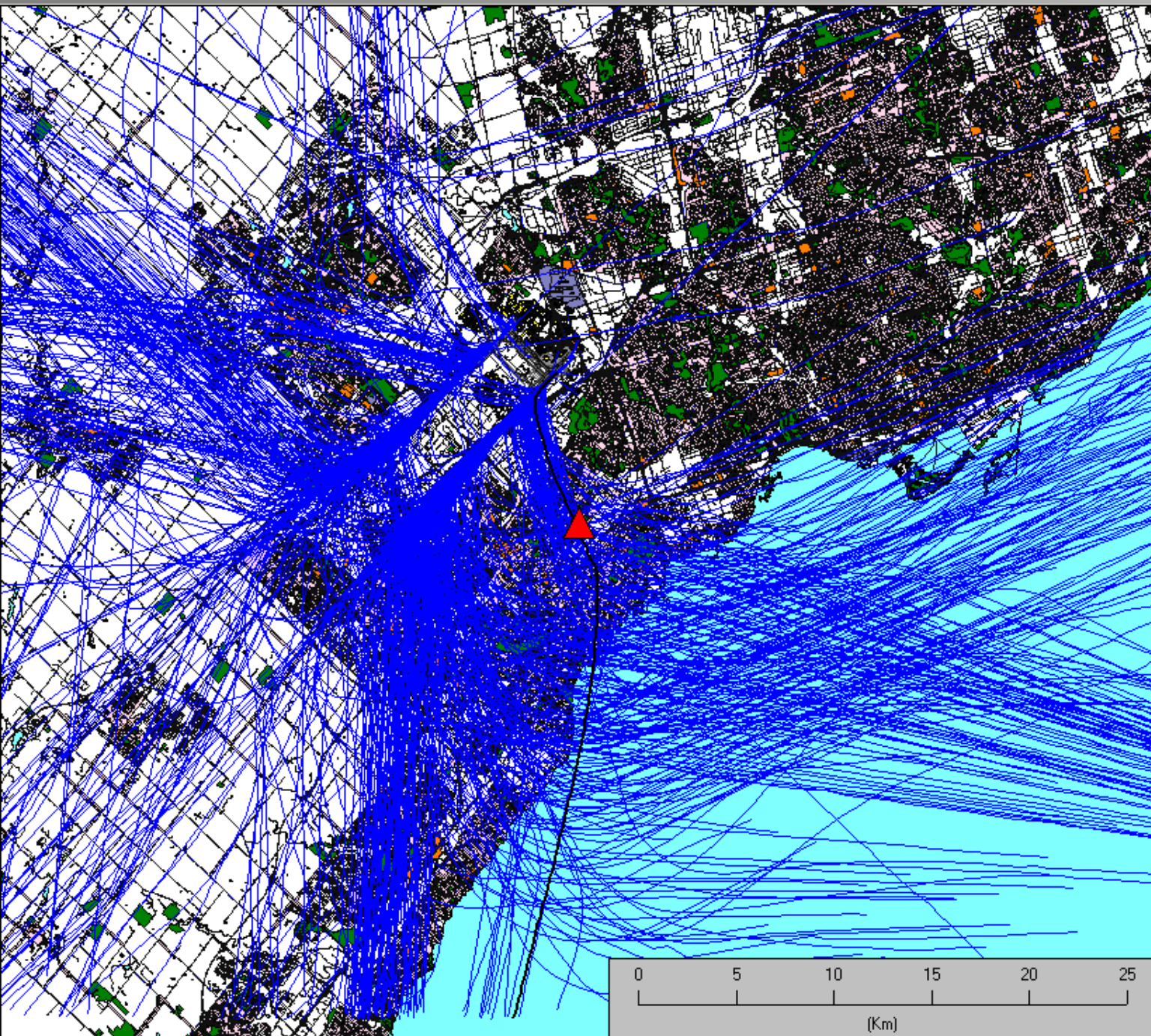


What we did



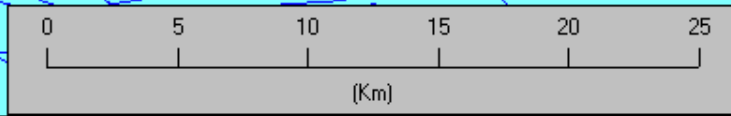
Early Jet Turns and Prop Turns Statistics

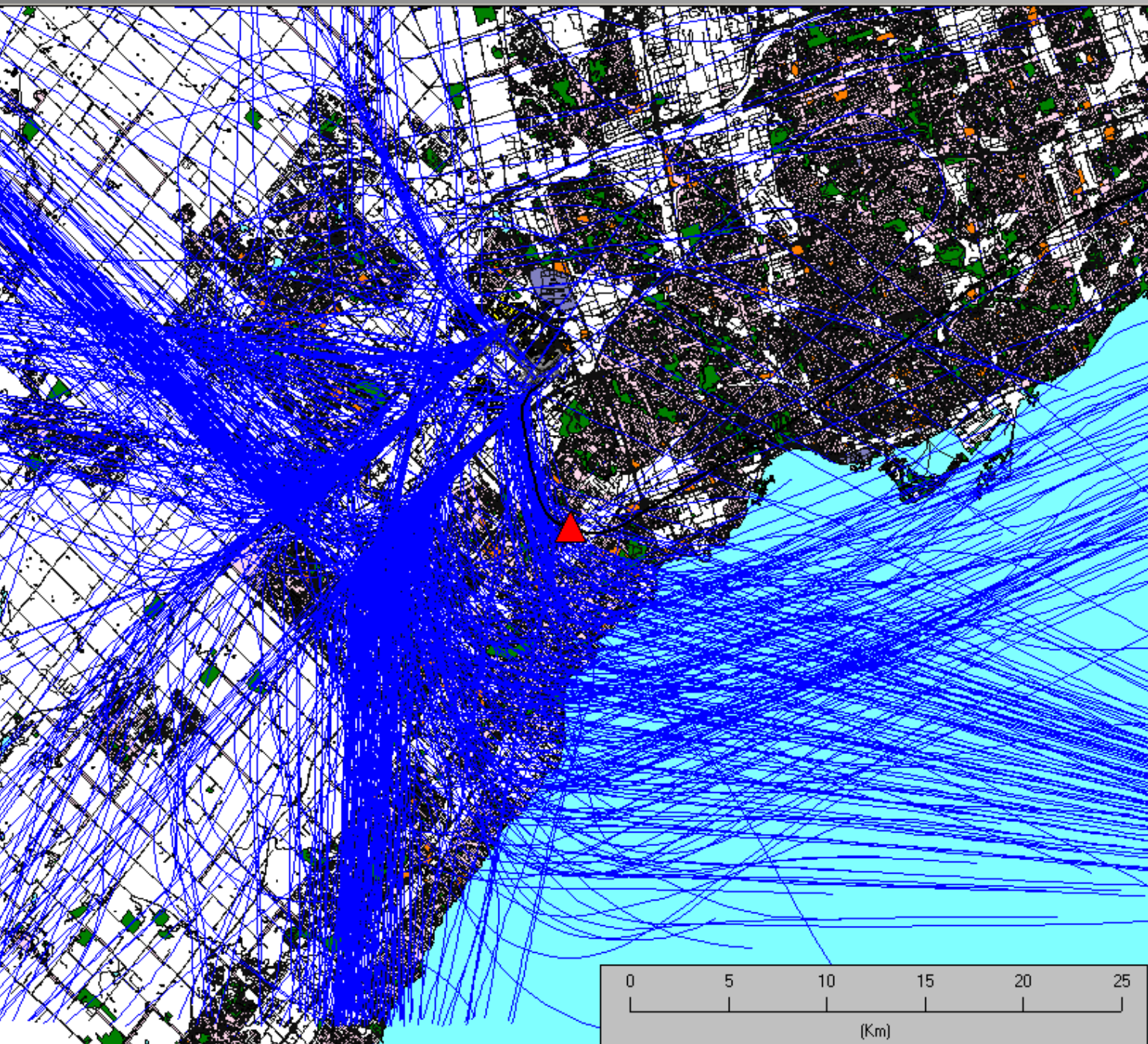
- Because the inquiry was specific to the Applewood Heights community, turns to the south were counted for the years 2004 through April 2012
 - Using the Noise Management system:
 - Flight tracks were filtered for departures of eligible jets for the early jet turn and the propeller aircraft turns on Runways 24 Left and Right
 - Data was retrieved from the early turn trials for 2004 through 2005
 - The number of aircraft and the number of turns were recorded
- 



Time : 11:48:41
Date : 3/11/2008
Type : C208
Operation : DEP
Runway : 24R
Origin : CYZ
Destination : KILM
Rwy Time :
Periode : 20080311 - 20080311
Filter :
OPERATION = "DEP" ORDER BY
START_DATE, D_A_TIME
Comments:

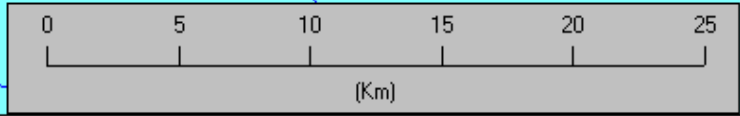
March 11, 2008 Departures to the West

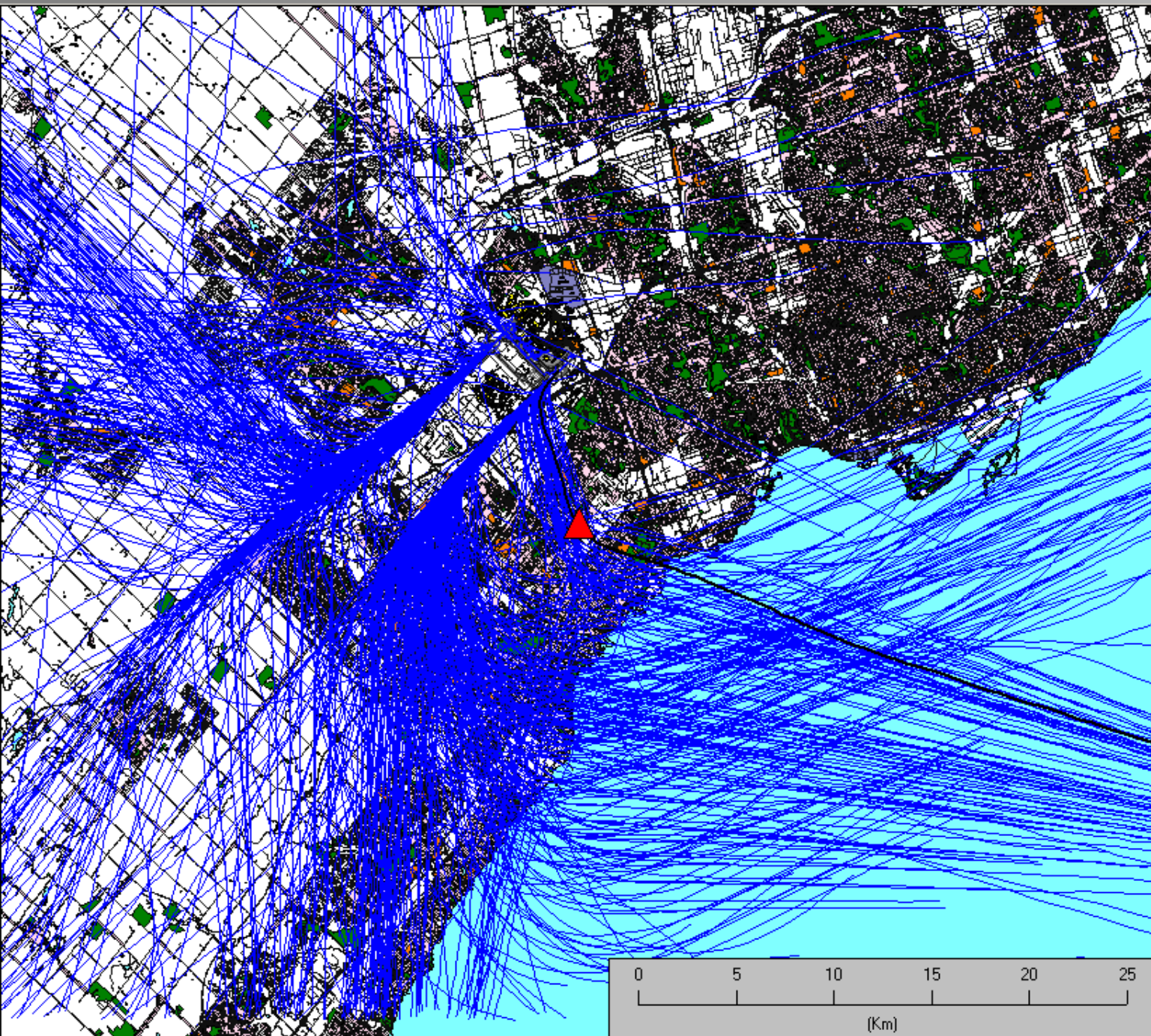




Time : 18:52:16
Date : 3/13/2009
Type : B190
Operation : DEP
Runway : 24R
Origin : CYYZ
Destination : CYGK
Rwy Time :
Periode : 20090313 - 20090313
Filter :
OPERATION = "DEP" ORDER BY
START_DATE, D_A_TIME
Comments:

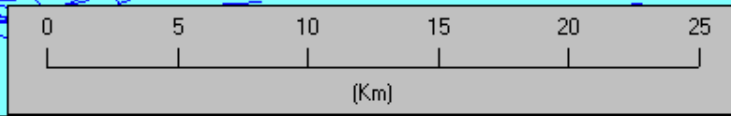
March 13, 2009 Departures to the West

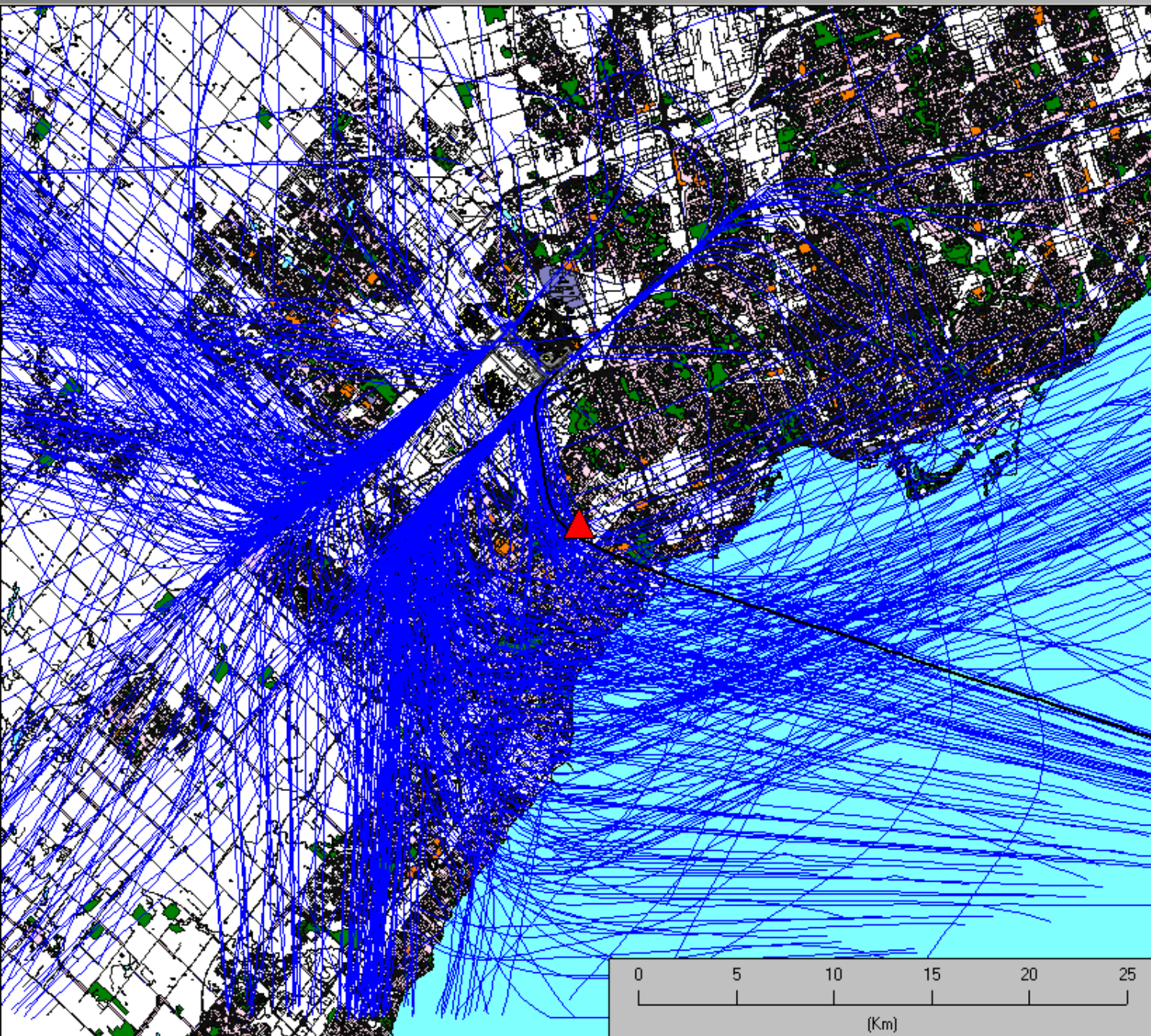




Time : 09:56:47
Date : 3/18/2010
Type : B190
Operation : DEP
Runway : 24R
Origin : CYZ
Destination : KMHT
Rwy Time :
Periode : 20100318 - 20100318
Filter :
OPERATION = "DEP" ORDER BY
START_DATE, D_A_TIME
Comments:

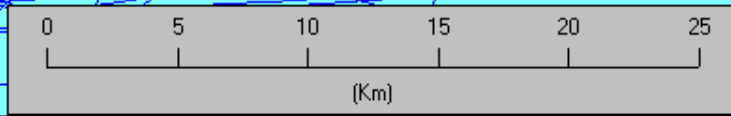
March 18, 2010 Departures to the West

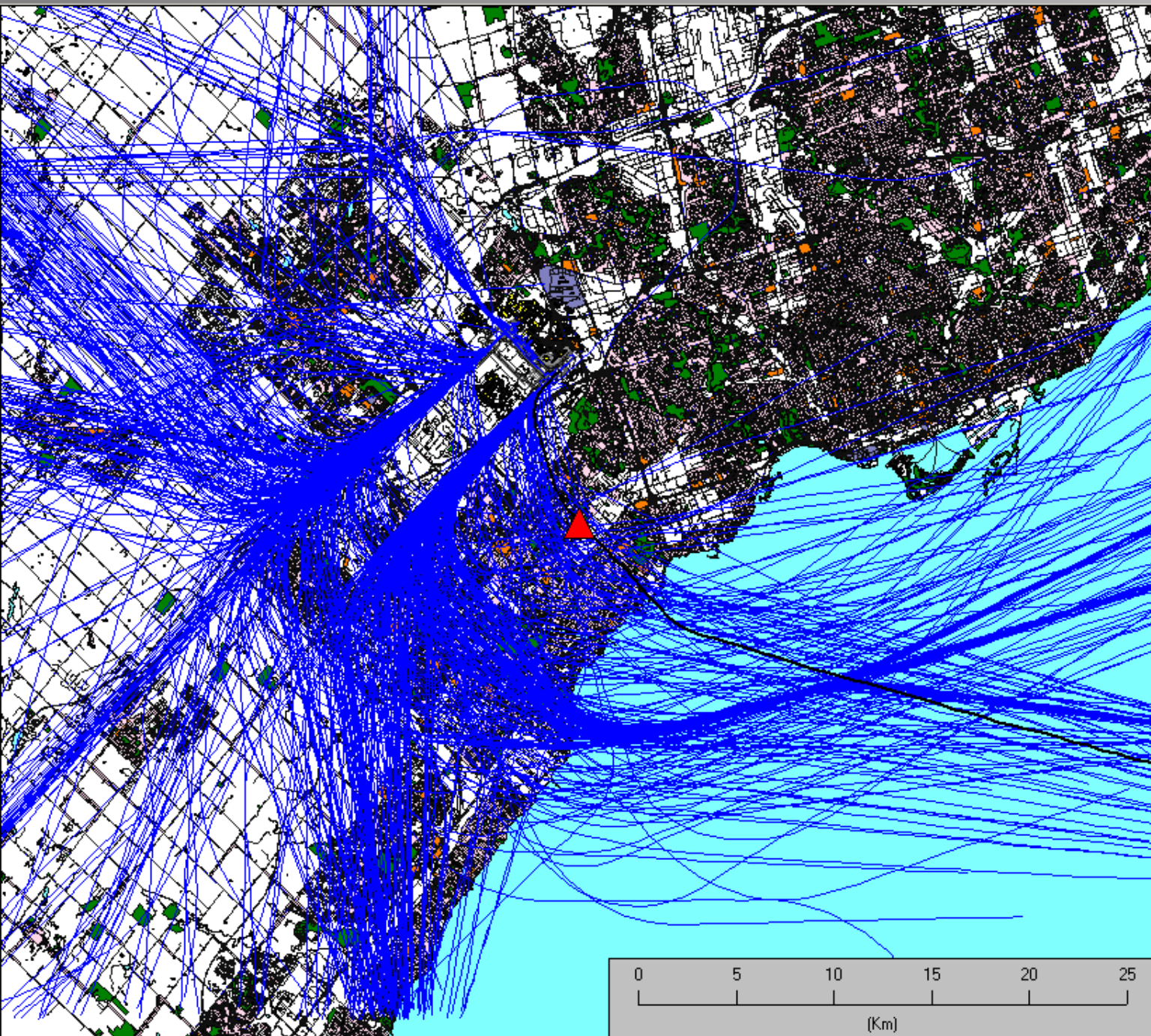




Time : 15:42:54
Date : 3/16/2011
Type : B190
Operation : DEP
Runway : 24R
Origin : CYZ
Destination : KMDT
Rwy Time :
Periode : 20110316 - 20110316
Filter :
OPERATION = "DEP" ORDER BY
START_DATE, D_A_TIME
Comments:

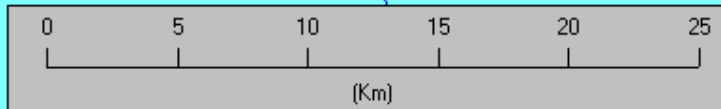
March 16, 2011 Departures to the West





Time : 06:30:59
Date : 3/14/2012
Type : DH8D
Operation : DEP
Runway : 24R
Origin : CYZ
Destination : KEWR
Rwy Time :
Periode : 20120314 - 20120314
Filter :
OPERATION = "DEP" ORDER BY
START_DATE, D_A_TIME
Comments:

March 14, 2012 Departures to the West





Early Jet Turns and Prop Turns Statistics



Prop Aircraft Turns and Early Jet Turns Statistics

	2004	2005	2006**	2007	2008*	2009	2010	2011	Jan-Apr 2012
Departures 24L/R	42580	50864	50485	54014	60504	53359	48244	52864	19180
Props (Approved Hours)									
Props (Approved Hours)	5770	6482	6579	8126	8565	8713	7704	8425	3413
Prop Turns (south)	5023	5344	6045	7490	7513	7419	6848	7567	3213
% Prop Turns	11.80%	10.51%	11.97%	13.87%	12.42%	13.90%	14.19%	14.31%	16.75%
% Prop Turns To Eligible	87.05%	82.44%	91.88%	92.17%	87.72%	85.15%	88.89%	89.82%	94.14%
Eligible Jets (Jet Turn Hours)									
Eligible Jets (Jet Turn Hours)	8250	11856	11925	14404	13830	12377	9081	7405	1959
Jet Turns (south)	708	1005	2678	3971	4179	3372	2123	1550	238
% Early Jet Turns	1.66%	1.98%	5.30%	7.35%	6.91%	6.32%	4.40%	2.93%	1.24%
% Early Jet Turns to Eligible	8.58%	8.48%	22.46%	27.57%	30.22%	27.24%	23.38%	20.93%	12.15%
Total Prop and Jet Turns (south)									
Total Prop and Jet Turns (south)	5731	6349	8723	11461	11692	10791	8971	9117	3451
% Turns of Departures 24L/R	13.46%	12.48%	17.28%	21.22%	19.32%	20.22%	18.60%	17.25%	17.99%

Prop Turn Hours (2004 to Feb 2008): 7:00 am to 11:00 pm

*Prop Turn Hours Trial (March 2008 to current): 6:30 am to 11:30 pm

**Jet Turn Hours: 7:00 am to 11:00 pm (Trial prior to 2006)



Conclusions



Conclusions

- There was an increase in both Propeller Aircraft Turns and Early Jet Turns between 2004 and 2008
- From 2008 onwards, the number of:
 - Propeller Aircraft Turns remained consistent
 - Early Jet Turns decreased
- Overall, since 2008, there has been a decrease in the number of aircraft turning to the south



Conclusions

- Complaints are primarily related to the propeller aircraft turns
- Majority of complaints are against the standard operations
- Few complaints are against the Extended Hours Trial for Propeller Aircraft Turns
- The statistics do not reveal a cause for the increase in complaints in 2012



Thank you



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